

Substitute for form 1449A/PTO		<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANTS</b> (use as many sheets as necessary)		<b>Complete if Known</b>	
Sheet 1 of 2		Application Number		09/898,850	
		Filing Date		July 3, 2001	
		First Named Inventor		Ungerboeck	
		Group Art Unit		2634	
		Examiner Name		D.V. Ha	
		Attorney Docket Number		13226US02	

U.S. PATENT DOCUMENTS					
Examiner Initial*	Cite No. <sup>1</sup>	Document Number Number-Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
DL		5,140,417	08.1992	Tanaka	
DL		5,253,078	10.1993	Balkanski et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>

OTHER ART -- NON PATENT LITERATURE DOCUMENTS		
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published
DL		T.M. Cover, et al., <u>Elements of Information Theory</u> , Wiley Series in Telecommunications, A Wiley-Interscience Publication, 1991, pgs. 1-542
DL		J.M. Wozencraft et al., <u>Principles of Communication Engineering</u> , Chapter 6-"Implementation of Coded Systems," John Wiley & Sons, Inc., 1965, pgs. 363-484
DL		D.A. Huffman, "A Method for the construction of minimum-redundancy codes," Proc. IRE, vol. 40, 1952, pgs. 1098-1101
DL		M. Tomlinson, "New automatic equalizer employing modulo arithmetic," Electron. Lett., vol. 7, March 1971, pgs. 138-139
DL		G. D. Forney, Jr., "Trellis shaping," IEEE Trans. Inform. Theory, vol. 38, March 1992, pgs. 281-300
DL		P. Fortier, et al., "Multidimensional signal sets through the shell construction for parallel channels," IEEE Trans. Commun., vol. 40, March 1992, pgs. 500-512
DL		A. K. Khandani et al., "Shaping multidimensional signal spaces— Part I: Optimum shaping, shell mapping," IEEE Trans. Inform. Theory, vol. 39, November 1993, pgs. 1799-1808
DL		G. R. Lang et al., "A Leech lattice modem," IEEE J. Select. Areas Commun., vol. 7, August 1989, pgs. 968-973
DL		G. Ungerboeck et al., Broadcom Corporation, "Coding for V.90 Issue 2," TR-30.1/99-11-064R1, Telecommunications Industry Association, Clearwater Beach, FL, November 29, 1999

EXAMINER SIGNATURE		DATE CONSIDERED	05/11/06
--------------------	---	-----------------	----------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard St. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450 Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. Send TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1800-786-9199) and select option 2.

Substitute for form 1449A/PTO		<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANTS</b> (use as many sheets as necessary)		<b>Complete if Known</b>	
Application Number		09/898,850			
Filing Date		July 3, 2001			
First Named Inventor		Ungerboeck			
Group Art Unit		2634			
Examiner Name		D.V. Ha			
Attorney Docket Number		13226US02			
Sheet	2	of	2		

OTHER ART -- NON PATENT LITERATURE DOCUMENTS		
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published
DA		G. Ungerboeck, "Channel Coding with Multilevel/Phase Signals," IEEE Transactions on Information Theory, vol. IT-28, no. 1, January 1982, pgs. 55-67
DA		G. Ungerboeck, "Trellis-coded Modulation with Redundant Signal Sets, Part 1: Introduction," IEEE Communications Magazine, Vol. 25, No. 2, February 1987, pgs. 5-11
DA		H. Harashima et al., "Marched-transmission technique for channels with intersymbol interference," IEEE Trans. Commun., vol. COM-20, August 1972, pgs. 774-780
DA		R. Laroia, N. Farvardin and S. Tretter, "On optimal shaping of multi-dimensional constellations," IEEE Trans. Inform. Theory, vol. 40, July 1994, pgs. 1044-1056
DA		G.D. Forney, et al., "Modulation and coding for linear Gaussian channels," IEEE Trans. Inform. Theory, vol.44, No. 6, October 1998, pgs. 2384-2415
DA		G.D. Forney, et al., "Multidimensional constellations - Part 1: Introduction, figures of merit, and generalized cross constellations," IEEE J. Select. Areas Commun., vol. 7, No. 6, August 1989, pgs. 877-892
DA		ITU-T Recommendation V.90 (09/98)
DA		ITU-T Recommendation V.32 (02/98)

EXAMINER		DATE CONSIDERED	05/11/06
----------	---	-----------------	----------

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard St. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.